

THE SPHINGIDAE (LEPIDOPTERA) OF THE PUNJAB PROVINCE OF PAKISTAN

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Summary

ADULT SPHINGID MOTHS were collected from various localities of the Punjab Province, viz., Bahawalpur, Faisalabad, Kasur, Jhelum, Lahore, Lala Musa, Layyah, Murree, Islamabad and Sialkot during 1990-91. These collections yielded 15 species in 13 genera and two subfamilies. Due to an inadequate description the species *Pergesa elpenor rivularis* (Boisduval) has been redescribed.

Introduction

The members of the family Sphingidae are commonly called hawk moths, sphinx moths or hornworms. The name sphinx was first used by Reaumur (1736) for the English Privet Hawkmoth. Later on Linnaeus (1758) included *sphinx* as genus under the family Sphingidae.

The Sphingidae of India were first classified by Hampson (1892) on the basis of external visible characters. Rothschild and Jordan (1903) found that the classifications of previous authors were impracticable for the identification of hawkmoths and hence divided the family into two groups, Semanophorae and Asemanophorae.

Carcasson (1968) treated these two divisions as two subfamilies. Hodges (1971) indicated that these two subfamilies were not based on the rules of the code of Zoological Nomenclature. Therefore, he replaced them with Sphinginae and Macroglossinae.

The sphingid moths in the Indo-Pakistan subcontinent have been observed feeding on field crops such as gram, sesamum, sugar cane and tobacco, vegetables like potato and cucurbits, fruit trees like walnut, grape vines and jaman and ornamental plants, viz., obander and morning glory. The imagines have been noted to enter the beehives to rob them of honey and some species are pollinators of certain cacti and orchids (Hodges, 1971).

These moths have been fairly well studied in the undivided India, but no taxonomic work has been done on them in Pakistan. In view of this, the present taxonomic studies on the Sphingidae of the Punjab Province have been carried out.

Materials and methods

Adult moths were collected with the help of a hand-net from the light spots from various localities, viz., Bahawalpur, Faisalabad, Kasur, Lahore, Lala Musa, Layyah, Murree, Islamabad, Jhelum and Sialkot of the Punjab Province during 1990-91 (Fig. 1). These collections were supplemented with

specimens from the student collection, Department of Agricultural Entomology, University of Agriculture, Faisalabad.

The specimens were placed in a wax-filled petridish and identified to specific level. For venational studies the wings were permanently cleared of the scales by treating them with 95% ethanol, 10% hydrochloric acid and an aqueous solution of sodium chloride and sodium hypochlorite with distilled water, and the wings were mounted on slides in Hoyer's solution (Borror *et al.*, 1989). For a temporary suppression of the scales from various body parts, a drop of xylene was used. In order to study the characters of the labial palpi, the latter were opened or stretched with dissecting needles.

The measurements (from base to apex) of forewings were taken with finely pointed dividers and then their means \bar{x} and standard deviations were worked out. The terminology of Rothschild and Jordan (1903) was followed. The entire collection has been deposited in the Insect Museum, Department of Agricultural Entomology, University of Agriculture, Faisalabad.



Fig. 1. Localities of the Punjab Province where sphingid moths were collected during 1990-1991.

Checklist of the sphingid moths

Family Sphingidae

subfamily Sphinginae

Tribe Acherontiini

Acherontia lachesis (Fabricius)

Forewing length: ♂ \bar{x} = 50.5 S = 0.50 (3 specimens)

♀ \bar{x} = 61 (1 specimen)

Material examined: Murree 1 ♂, 1 ♀, 17.vii.91; 2 ♀, 23.vii.91.

A. styx Westwood

Forewing length: ♂ \bar{x} = 42.77 S = 2.44 (11 specimens)

♀ \bar{x} = 49.13 S = 2.53 (14 specimens)

Material examined: Faisalabad 7 ♂, 20.vi.90, 26.vi.90, 9.ix.90, 4.vi.91; 8 ♀, 15.v.91, 6.viii.90, 7.vii.90, 11.ix.90, 15.vii.90, 9.ix.90; Sialkot 1 ♂, 1 ♀, 12.v.91; Bahawalpur 2 ♀, 11.ix.91, 13.ix.91, 1 ♂, 13.ix.91; Lahore 1 ♀, 6.vi.91; Layyah 1 ♀, 27.iv.91; Okara 2 ♂, 20.v.91, 1 ♀, 20.v.91.

Agrius convolvuli (Linnaeus)

Forewing length: ♂ \bar{x} = 43.63 S = 4.28 (10 specimens)

♀ \bar{x} = 48.65 S = 4.10 (10 specimens)

Material examined: Faisalabad 3 ♂, 6.v.91, 10.v.91, 6 ♀, 10.v.91; Sialkot 2 ♂, 12.v.91, 11.v.91; Islamabad 2 ♂, 29.iv.91; Murree 1 ♂, 17.vii.91; Lahore 4 ♀, 2 ♂, 13.v.91.

Tribe Ambulycini

Ambulyx belli (Jordan)

Forewing length: 43

Material examined: Murree 1 ♂, 23.vii.91.

Clanis deucalion (Walker)

Forewing length: 56

Material examined: Murree 1 ♀, 23.vii.91.

Leucophlebia lineata Westwood

Forewing length: ♂ \bar{x} = 36.25 S = 0.50 (5 specimens)

Material examined: Kasur 5 ♀, 7.viii.91.

Marumba sperchius albicans (Butler)

Forewing length: 1 ♂, 54 (1 specimen), 1 ♀, 63 (1 specimen)

Material examined: Murree 1 ♂, 1 ♀, 17.vii.91.

subfamily Macroglossinae

Tribe Macroglossiini

Dephnia nerii (Linnaeus)

Forewing length: ♂ \bar{x} = 45.0 S = 1.00 (7 specimens)

♀ \bar{x} = 47.00 S = 2.98 (4 specimens)

Material examined: Faisalabad 4♂, 15.ix.91, 21.ix.91, 12.xi.90, 10.iii.90, 3♀, 6.ix.90, 20.ix.90, 15.ix.90; Sialkot 3♂, 12.v.91, 1♀, 12.v.91.

Nephele didyma f. didyma (Fabricius)

Forewing length: ♂ \bar{x} = 31.25 S = 0.35 (3 specimens)

♀ \bar{x} = 32.38 S = 0.18 (2 specimens)

Material examined: Faisalabad 3♂, 1.ix.91, 13.ix.91, 7.x.91, 2♀, 13.xi.91, 18.xi.91.

Nephele didyma f. hespera (Fabricius)

Forewing length: ♂ \bar{x} = 33.25 S = 0.87 (5 specimens)

♀ \bar{x} = 33.75 S = 1.01 (4 specimens)

Material examined: Faisalabad 5♂, 13.vi.90, 16.vii.90, 20.ix.90, 21.ii.90, 4♀, 16.vii.90, 17.vi.90, 27.ix.90, 13.ix.90.

Macroglossum sp. Scopoli

Forewing length: 27

Material examined: Murree 1♂, 20.viii.91.

Tribe Choerocampini

Hyales lineata livornica (Esper)

Forewing length: ♂ \bar{x} = 32.58 S = 2.58 (8 specimens)

♀ \bar{x} = 34.86 S = 4.55 (7 specimens)

Material examined: Faisalabad 5♂, 17.ix.90, 20.vi.90, 5.viii.90, 5♀, 22.viii.91, 1.v.89; Sialkot 3♂, 12.v.91, 2♀, 12.v.91.

Pergesa elpenor rivularis (Boisduval)

As the description of this species by Bell and Scott (1937) is quite inadequate, it is redescribed in detail below:

Thorax snuff brown, with four longitudinal rosy stripes on dorsum. Forewing underside rosy, with a subapical snuff-green patch, a black streak in the cell and another along the inner margin, the latter not reaching the anal angle. Hindwing with basal half of upperside black, this colour narrowly extending out along the costa which is of plain white colour; underside red with snuff-green costal band and a transverse band of the same colour from costal margin to near inner margin. Abdomen with a medio-dorsal rosy-red line, a lateral black patch on first segment, lateral sides with white dots.

Forewing length: 35.

Material examined: Murree 1♂, 17.vii.91.

Hippotion celerio (Linnaeus)

Forewing length: ♂ \bar{x} = 33.08 S = 0.97 (9 specimens)

♀ \bar{x} = 34.80 S = 2.18 (5 specimens)

Material examined: Faisalabad 8♂, 11.xi.90, 27.ix.90, 13.ix.90, 3♀, 23.xi.90; Sialkot 2♀, 12.v.91; Murree 1♂, 30.iv.91.

Theretra alecto (Linnaeus)Forewing length: ♂ \bar{x} = 37.88 S = 2.02 (4 specimens)♀ \bar{x} = 42.33 S = 1.26 (3 specimens)

Material examined: Lala Musa 2♂, 27.ix.90; Faisalabad 2♂, 8.viii.90, 22.vii.90, Faisalabad 2♀, 20.vii.91; Jhelum 1♀, 27.ix.90.

T. oldenlandiae (Fabricius)Forewing length: ♂ \bar{x} = 31 (1 specimen)♀ \bar{x} = 29.8 S = 1.3 (5 specimens)

Material examined: Islamabad 1♂, 7.x.90; Faisalabad 4♀, 13.ix.90, 16.ix.90, 9.viii.90, 15.viii.90; Islamabad 1♀, 7.x.90.

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***Idaea seriata* Schrank, 1802 (Lep.: Geometridae): A second or possible third brood in 1995**

I was intrigued to find a female *I. seriata* having been attracted to the light in the drying room of the flat in Cippenham, Slough on the morning of 2 October. This specimen laid a not inconsiderable quantity of ova before being released, the larvae overwintering and pupating in March 1996.

Riley & Townsend (1992, *Ent. Rec.* **104**: 46-47) detail the discovery of an example of this geometrid at the Rothamsted light trap network, even later on 17 October 1990. In the same year, Baker (1996, *pers. comm.*) details a specimen on 15 October in Caversham, Reading.

These data are at variance with the time given for the appearance of the species' second brood as mid-August to the third week of September (Plant, 1993, *Larger moths of the London area*), mid-August until mid-September (Skinner, 1984, *Moths of the British Isles*), and August (Riley, 1991, *A natural history of the butterflies and moths of Shropshire*). Skou (1986, *The*